AF/2653

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **A. DAVID ERPELDING**	§	Attorney Docket No.: **SJO920010018US1**
Serial No.: **09/939,074**	§	Examiner: **MARK S. BLOUIN**
Filed: **24 AUGUST 2001**	§	
For: **BALANCED AND DAMPED SUSPENSION FOR USE IN A DISK DRIVE**	§	Art Unit: **2653**

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Brief is submitted in triplicate in support of the Notice of Appeal, mailed on February 17, 2005, in the above-referenced application.

CERTIFICATE OF MAILING
37 CFR 1.8(A)

I hereby certify that this correspondence is, on the date shown below, being deposited with the United States Postal Service as First Class Mail in an envelope addressed to **Mail Stop Appeal Brief – Patents**, Commissioner of Patents, P.O. Box 1450, Alexandria VA 22313-1450.

Signature of Betty J. Kirk

February 17, 2005
Date

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REAL PARTY IN INTEREST

The Real Party in Interest in the present Appeal is International Business Machines Corporation, the assignee, as evidenced by the assignment set forth at Reel 012130, Frame 0649.

RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are known to Appellant, Appellant's legal representative, or assignee which will directly affect, or be directly affected by, or have a bearing on the Board's decision in the present Appeal.

STATUS OF THE CLAIMS

Claims 1 – 12 stand finally rejected by the Examiner as noted in the Final Office Action dated December 28, 2005, and are on appeal.

STATUS OF THE AMENDMENTS

No amendment was submitted subsequent to the Final Office Action.

SUMMARY OF THE INVENTION

As shown in Figures 4c and 4d, Appellant's invention comprises a disk drive suspension having optimal sag. Page 6, lines 19 – 20. Optimal sag is acheived by having vertical alignment between the torsional axis 405 of the suspension and the pivot point 407 of the slider 404. Page 4, lines 24 – 25. In other words, the torsional axis is adjusted to concentrically "pass through" the pivot point 407. Page 17, line 15. As explained in the present application, a mismatch between the torsional axis and the pivot point (either positive (Figures 4a and 4b) or negative (Figures 4e and 4f)) causes excess track misregistration (TMR). Page 4, lines 15-20; and page 5, lines 1-4.

ISSUE

Is the Examiner's rejection of the claims under 35 U.S.C. §§ 102(e) and 103(a) as being unpatentable over the cited references well founded?

GROUPING OF THE CLAIMS

For purposes of this appeal, all of the claims stand or fall together as one group.

ARGUMENTS

The Examiner finally rejected Claims 1 and 7 under 35 U.S.C. § 102(e) as being anticipated by *Fujiwara*. Under 35 U.S.C. § 103(a), the Examiner stated that Claims 2, 5, 6, 8, 11, and 12 are unpatentable over *Fujiwara* in view of *Blaeser*, and that Claims 3, 4, 9, and 10 are unpatentable over Fujiwara in view of Manzke. Final Office Action, paragraphs 2, 5, and 8.

The *Fujiwara* reference

The specification of *Fujiwara* does not contain the following three terms: torsion, axis, or pivot. The reason is quite simply that *Fujiwara* is completely unconcerned with torsional axes and pivot points. Rather, *Fujiwara* focuses on the use of two ceramic bars 40 to control the "sway direction" of the suspension. Page 2, paragraph 32, last two lines; page 3, paragraph 43, last three lines. The sway direction is clearly defined in Figure 1 (double-headed arrow "S") to be in the horizontal direction or to the lateral sides of the suspension. Moreover, all three view of the suspension (Figures 1 – 3) depict plan views which cannot be used to illustrate vertical movement of the suspension.

The Examiner asserts that the "small circle in the center of (16)" is the pivot point, but there is no support for this statement. Final Office Action, page 3, line 1. Although the numeral "16" appears in Figure 1, it is not referenced a single time in the specification. It could be a weld. Furthermore, even if one assumes it is a pivot point, how does a plan view of the suspension establish *vertical* coincidence between 16 and a torsional axis?

The *Blaeser* reference

The Examiner states that *Blaeser* has ribs and that they are formed such that the distribution of mass of the load beam results in the balance of the total mass about the torsional axis. Final Office Action, paragraph 6, second sentence. However, *Blaeser's* "ribs" are actually flanges (see Appellant's Figure 6: ribs 608, flanges 610) which are quite distinctive in form and structure compared to ribs. Moreover, like *Fujiwara*, the term "torsion" does not appear

anywhere in the specification of *Blaeser*. Thus, how can *Blaeser* be said to address the issue of torsional balance when the term is not even mentioned in the patent?

The *Manzke* reference

The Examiner cites *Manzke's* column 3, lines 4 – 5 for the proposition that the load beam is formed of magnesium or a magnesium rich alloy. However, those materials are specified for "Beam section 9 and head tower 10," not the load beam. Column 3, lines 1 – 2. Careful comparison of the 1980's architecture of *Manzke* to modern designs reveals that beam section 9 and head tower 10 are equivalent to today's actuator arm and mount plate. Importantly, the "hinge" of *Manzke* (web 22 in Figure 1B) is located at mounting means 16, its equivalent "load beam" is distal to the hinge at head unit 7, and it is mounted to the head tower 10 with screws 18. Defining these equivalents is critical because the materials specification used by the Examiner relies on the opposite interpretation. Appellant maintains that magnesium is only specified for the arm and mount plate (i.e., beam section 9 and head tower 10), but not for the load beam (i.e., head unit 7). Thus, *Manzke* cannot be used to reject Appellant's claims as relied upon by the Examiner.

The Claims

Each of the two independent claims (Claims 1 and 7) require the following element, "said torsional axis approximately passing through said pivot point." Since *Fujiwara* is only concerned with controlling the horizontal or "sway direction" of the suspension, and it does not mention the terms torsion, axis, or pivot, it is impossible to support the assertion that *Fujiwara* anticipates Claims 1 and 7. The plan view drawings of that reference do not and cannot be used to illustrate vertical movement of the suspension. Furthermore, no pivot point for a head gimbal is reasonably established in *Fujiwara*. With the definition of a pivot point, one cannot then state that another undefined element (i.e., the torsional axis) "passes through" the pivot point. Claims 1, 7, and all of their dependent claims are clearly allowable over *Fujiwara*.

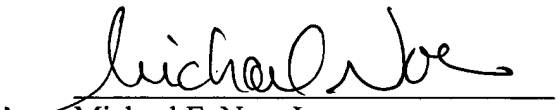
Dependent Claims 2 and 8 state that the "load beam comprises one or more ribs," and that the "ribs are formed such that distribution of mass of said load beam results in the balance of said total mass about said torsional axis." In contrast, *Blaeser's* "ribs" are flanges, not ribs, and the

ability to balance mass about torsional axes does not appear in and is not even suggested by either *Fujiwara* or *Blaeser*. Thus, in addition to the distinguishing elements of Claims 1 and 7, Claims 2 and 8, respectively, are readily patentable over *Fujiwara* in view of *Blaeser* and are in condition for allowance.

Finally, dependent Claims 3, 4, 9, and 10 address the material content of the load beam. The Examiner simply has mischaracterized *Manzke* to stand for the propositions contained in those claims. Although *Manzke* specifies some materials for its actuator arm and mount plate (i.e., beam section 9 and head tower 10), it is silent as to the content of its modern-day equivalent load beam (i.e., head unit 7). Thus, Claims 3, 4, 9, and 10 are not unpatentable over*Fujiwara* in view of *Manzke*.

For all of the foregoing reasons it is respectfully urged that the claims are in condition for allowance and favorable action is requested. Please charge **Hitachi Global Storage Technologies' Deposit Account No. 50-2587** in the amount of **$500.00** for the Appeal Brief fee. If any additional fees are required, please charge **Hitachi Global Storage Technologies' Deposit Account No. 50-2587**.

Respectfully submitted,



Michael E. Noe, Jr.
Reg. No. 44,975
BRACEWELL & PATTERSON, L.L.P.
P.O. Box 61389
Houston, Texas 77208-1389
(512) 472-7800
ATTORNEY FOR APPELLANT

APPENDIX

1. A suspension for use in a magnetic storage disk drive, comprising:

a hinge member; and,

a load beam having an associated head gimbal pivot point and a torsional axis, wherein said hinge and said load beam are formed separately and subsequently joined together, said torsional axis approximately passing through said pivot point.

2. A suspension load beam as in claim *1* wherein said load beam comprises one or more ribs formed along a portion of said load beam, said ribs are formed such that the distribution of mass of said load beam result in the balance of said total mass about said torsional axis.

3. A suspension load beam as in claim 1 wherein said load beam is formed from magnesium.

4. A suspension load beam as in claim I wherein said load beam is formed from a magnesium rich alloy.

5. A suspension as in claim 1 wherein said load beam is formed from a constrained layer damping material.

6. A suspension as in claim 5 wherein said constrained layer damping material comprises a sandwich of two metal layers and a viscoelastic damping material disposed between the two metal layers.

7. A disk drive, comprising:

at least one magnetic disk having a recording surface;

a motor connected with said disk;

a slider with a trailing surface;

a magnetic recording head for recording digital data on said recording surface of said disk, said magnetic recording head formed on said trailing surface of said slider;

a suspension connected with said slider, said

suspension comprising a hinge portion, a load beam portion having a first and second outside edge, said hinge portion and load beam portion being formed separately and joined together, said load beam having a distribution of total mass balanced about a torsional axis, said torsional axis approximately passing through said pivot point;

a rigid arm connected with said suspension; and

an actuator connected with said rigid arm.

8. A disk drive as in claim 7 wherein said load beam has one or more ribs formed along a portion of said load beam, said ribs are formed such that the distribution of mass of said ribs when combined with the distribution of mass of other portions of said load beam result in the balance of said total mass about said torsional axis.

9. A disk drive as in claim 7 wherein said load beam is formed from magnesium.

10. A disk drive as in claim 7 wherein said load beam is formed from a magnesium rich alloy.

11. A disk drive as in claim 7 wherein said load beam is formed from a constrained layer damping material.

12. A suspension as in claim 11 wherein said constrained layer damping material comprises a sandwich of two metal layers and a viscoelastic damping material disposed between the two metal layers.